

# **Bulk Carrier FEDERAL SW Major Marine Occurrence**

## **Executive Summary**

At around 05:50am on July 10, 2022, the Panama registered bulk cargo vessel FEDERAL SW, with gross tonnage of 40032 and IMO number 9443815, ran aground at the harbor mouth when entering Hoping Harbor in Hualien County, damaging the ship and causing it to take on water at the left side No. 1 water ballast tank (WBT) fore peak tank (FPT) and hull of No. 220 frame. No one was injured or killed and there was no environmental pollution.

In accordance with the Taiwan's Transportation Occurrence Investigation Act and the Casualty Investigation Code of the International Maritime Organization, the TTSB is an independent transportation occurrence investigation agency responsible for conducting this investigation. The investigation team also included members from the Maritime Port Bureau of the Ministry of Transportation and Communications Heping Industrial Special Use Port Administrative Group, Heping Industrial Port Corporation, Heping Port Pilots' Office, Suao Port Pilots' Office, and First Steamship Co., Ltd.

After comprehensive investigation and analysis of the factual data, a total of 10 findings and 11 safety recommendations were obtained.

### **The finding related to probable cause is as follows:**

1. The cause and result of the running aground of the FEDERAL SW are very similar to seven previous running aground accidents at Hoping Harbor; the ship was subject to strong reflection current from the shore when entering the harbor and began to deviate to the right in advance around 0.5 nautical miles before the southern outer breakwater ; the ship used the left rudder to

maintain the harbor entry navigation track, however, after passing the south breakwater opening, the right horizontal reflection current the bow was subjected to suddenly decreased while the stern was still subject to strong right horizontal current, making the bow clearly deviate to the left. The handling by the pilot was ultimately unable to guide the ship safely into the harbor entry navigation channel, causing the accident. The main probable cause of the accident was the strong reflection current from the shore and ship handling by the pilots.

**The findings related to risk are as follows:**

1. The various cases involving coal vessels running aground at the harbor mouth of Hoping Harbor show that the Industrial Development Bureau, MOEA (Hoping Industrial Harbor Administration) has not fulfilled its responsibility for supervision and effective improvement of overall navigation channel safety at the harbor; also, Hoping Harbor is short of dedicated pilots, showing that there is abnormal risk in supervision of industrial port pilots by the Maritime and Port Bureau, MOTC.
2. In the case, the pilots did not have sufficient understanding of the tide and current situation in the navigation channel at Hoping Harbor, seriously affecting their judgment of when to execute emergency turnaround of the ship.
3. Most of the accidents at Hoping Harbor have occurred 2-3 hours after ebb tide; the smaller the gap in tidal range on the tidal chart, the shallower the water is. At the same time, before high and low tide, current speed increases after current direction change, increasing risk for vessels sailing in the narrow navigation channel. The vessel in the accident did not include tide in the risk factors in the docking plan.
4. The various running aground accidents at Hoping Harbor show that the ship

handling skills of the pilots alone are insufficient to prevent similar accidents occurring. In this case, not only was the assistive function of tugs not utilized, with the existing number of tugs and their horsepower, they would have not been able to have much effect.

5. Controllers responsible for monitoring the navigation channel should enhance their navigation risk awareness regarding the harbor entry navigation channel where many accidents have occurred. This case shows a lack of emergency handling ability and situational awareness that meant they did not warn the vessel in time, instruct it to abandon its harbor entry plan and adopt an emergency turn around.
6. The handling actions of the main navigation channel by various parties in this case shows a lack of close coordination and communication; pilots, tugs and vessel traffic service (VTS) controllers lack ship-shore three-way combined training and this is an important accident risk factor.

**The other findings are as follows:**

1. The chief pilot was not familiar with the definition of slack tide and did not grasp the current situation in the main navigation channel at Hoping Harbor at the time of the accident. His ship handling when entering the harbor and the version he gave after the accident were totally different. His skills as a professional pilot were not displayed during the accident.
2. “Attachment 2 Flow chart for reporting by the Maritime Center” of the Operating Guidelines of the Maritime Center of the Maritime and Port Bureau does not require that “maritime disasters”, “maritime disaster cases” or “major maritime cases” are reported to the Taiwan Transportation Safety Board (TTSB).
3. From the establishment of the TTSB to the time of this accident, the East

Taiwan Maritime Affairs Center and Hoping Industrial Port Corporation have not reported four major marine accidents and suspected major marine accidents as required by Transportation Occurrences Investigation Act.

## **Safety Recommendations**

### **To Hoping Harbor Pilot Office**

1. Before piloting, the tidal flow data should be analyzed and the safe harbor docking plan confirmed, understanding docking risk and emergency preparation measures; before the inter-harbor support plan ends, after boarding, the various piloting duties of the pilots must be properly discharged to ensure safe navigation in the navigation channel.
2. Increasing the minimum personnel quota of pilots should be discussed, returning to the importance of harbor dedicated pilots to maintain harbor navigation channel navigation safety.
3. Discuss establishment of a mechanism with Hoping Industrial Port Corporation (Hoping Industrial Harbor Administration) to carry out periodic combined training of pilots, tug and vessel traffic service (VTS) controllers in the main navigation channel to enhance their coordination and communication and tacit understanding when handling emergencies to maintain navigation channel navigation safety.

### **To Hoping Industrial Port Corporation**

1. Enhance harbor operations management mechanism, including: enhance controller navigation channel emergency control measures, upgrade tug horsepower, add tide calculation to coal vessel docking plans, solve the problem of current affecting ship operation in the navigation channel and improve the harbor docking environment to prevent such accidents happening again.

2. Discuss revision of emergency control measures of Hopping Harbor vessel traffic service (VTS) controllers including demanding that a vessel turn around and re-enter the harbor or cancelling harbor entry. Hopping Industrial Port Corporation must include these emergency measures in the Hopping Harbor VTS operating handbook “3. Vessel Entry and Exit of Hopping Harbor Control Operating Guidelines” and other documents for adherence by vessels and harbor to maintain harbor channel navigation safety.
3. With Hopping Harbor Pilot Office, establish a mechanism to carry out periodic combined training of pilots, tug and vessel traffic service (VTS) controllers in the main navigation channel to enhance their coordination and communication and tacit understanding when handling emergencies to maintain navigation channel navigation safety.

**To Hopping Industrial Harbor Administration, MOEA**

1. Guide Hopping Industrial Port Corporation and Hopping Harbor Pilot Office to establish a mechanism to carry out periodic combined training of pilots, tug and vessel traffic service (VTS) controllers in the main navigation channel to enhance their coordination and communication and tacit understanding when handling emergencies to maintain navigation channel safety.
2. Enhance the supervision and management mechanism for Hopping Industrial Port Corporation and improve the effect of navigation channel current on the navigation safety of large coal vessels entering the harbor to prevent the repeated occurrence of ship groundings at the harbor mouth.

**To Maritime and Port Bureau, MOTC**

1. Guide Hopping Harbor Pilot Office to handle employee promotion planning and review related requirements and substantive results of other pilots’ support addition, guide support pilots so that they are familiar with the harbor

environment and can bring the support function fully into play.

2. Carry out overall review and discuss increase of the minimum quota of pilots in each pilot area nationwide. To cope with changing harbor operations environment as times change and avoid excess work fatigue of pilots, and considering the national labor health system, there should also be sufficient manpower for alternate shifts to avoid maritime accidents occurring due to pilot fatigue.
3. Direct subordinate agencies to report major maritime accidents or suspected major accidents to the TTSB according to Article 9 of the Transportation Occurrences Investigation Act and the Marine Casualty Incident Emergency Reporting System of Marine Casualty Prevention and Protection, MOTC.

**Note:** The final report of this occurrence investigation is published in Chinese. To facilitate understanding for non-Chinese readers, the Executive Summary has been translated into English. While every effort has been made to ensure accuracy, discrepancies may occur. In the event of any inconsistency, the Chinese version shall prevail.